Space Weather Forecast

Issued on Monday, 05 February 2024 at 13:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares expected, with a chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with several Moderate-class flares observed in the past 24 hours, most originating from a large and complex region near the southeast limb. This region shows significant magnetic complexity, having mixed polarities contained within one large penumbral area, There are currently nine sunspot regions on the visible disc. Another noteworthy sunspot region is in the southwest, which is also magnetically complex. A new simple region has rotated around the southeast limb. All other spots have shown little change and remain small.
No clear Earth-directed Coronal Mass Ejections (CMEs) have been observed in the past 24 hours, though an eruption from the southeast early on 05 Feb is yet to be analysed.

Solar Wind / Geomagnetic Activity: Solar winds were at ambient to slightly elevated levels, with wind speeds varying between 350-430 km/s. The Interplanetary Magnetic Field was weak to moderate, with the north-south component varying mostly weakly. Geomagnetic activity was Quiet (Kp0-2) geomagnetic activity, with an Unsettled (Kp3) interval observed at 04/2100-0000 UTC.

Energetic Particles / Solar Radiation: Solar radiation levels are at background levels.

Four-Day Space Weather Forecast Summary
Solar Activity: Overall activity is most likely to be Moderate, with further Moderate-class flares expected until Day 4 (08 Feb), when they become likely, and there is a chance of Strong flares until Day 4, when the risk reduces to a slight chance. These mainly from the large region in the southeast or the other noteworthy region in the southwest before it rotates off the visible disk by Day 4.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast. Recent solar wind parameters suggest the potential for a weak coronal hole fast wind to be arriving at Earth. Wind speeds perhaps becoming slightly elevated in the coming hours, before easing through Days 2 and 3 (06-07 Feb).
Geomagnetic activity is expected to be mostly Quiet to Unsettled, perhaps with a slight chance of Active intervals Days 1 and 2 (05-06 Feb) with any weak fast wind enhancement.

Energetic Particles / Solar Radiation: There is a daily slight chance of solar radiation exceeding the S1 threshold during the period.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	75	70
Very Active	R3 to R5 X	No	25	25	25	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	15	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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